

FOREIGN PATENT DOCUMENTS

0152733	8/1985	European Pat. Off.
0164012	11/1985	European Pat. Off.
0249713	4/1987	European Pat. Off.
0384955	9/1990	European Pat. Off.
0517956	12/1992	European Pat. Off.
0524653	1/1993	European Pat. Off.
002673738	9/1992	France

(List continued on next page.)

OTHER PUBLICATIONS

"*CCD Bar Code Scanner*;" ZB-1000/2000 Plus Series.
Zebex Industries, Inc., 1992 Zebex Catalog No. 920802.
"*CCD Bar Code Handy Scanner Model BHS-6000 Series*;"
Nippondenso Co., Ltd., Mar. 1992 brochure.

(List continued on next page.)

Primary Examiner—Donald T. Hajec
Assistant Examiner—Le Thien Minh
Attorney, Agent, or Firm—Brown, Martin, Haller &
McClain

[57]

ABSTRACT

An optical device for reading one- and two-dimensional symbologies at variable depths of field. The device has a light source for projecting emitted light toward the symbol image to be reflected back to an optical assembly, or zoom lens. The zoom gives multiple field of view capability to a CCD detector for detecting the reflected light, and generating a proportional electrical signal. The sensor is aimed for reading the symbology by a frame locator including a light source that emits a beam divided by diffractive optics into beamlets matching the dimensions of the respective field of views. Refractive optics are shifted in response to movement of the zoom lens for aiming the beamlets to form an aiming frame in accordance with the depth of field selected by the zoom lens. The device includes a microcomputer that communicates with a host PC including an API library with downloadable applications for image processing, including segmenting, analyzing, and decoding.

37 Claims, 35 Drawing Sheets